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Policy options and possible actions to expedite implementation: air pollution/atmosphere

Report of the Secretary-General

Summary

Most air pollution is a consequence of industrial development, energy production and use, and transportation. Efforts directed at adopting cleaner production processes, cleaner energy technologies and cleaner fuels therefore contribute to improving air quality and protecting the atmosphere. Policy options and possible actions are available for reducing air pollution, both indoor air pollution from traditional biomass fuels which adversely affect the health of women and children in particular and ambient air pollution from all industrial, energy and transport sources. The discussion in the present report concludes with a list of options and actions at the international level that would appear to be particularly effective. International cooperative efforts can help ensure that urgent and effective action is taken on these issues to further implementation and thus effectively contribute to achieving the goals of sustainable development.

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I. Introduction

1. At its fourteenth session, the review session of the second implementation cycle 2006-2007, the Commission on Sustainable Development conducted an evaluation of progress in implementing Agenda 21, the Programme for the Further Implementation of Agenda 21, the decisions taken at the ninth session of the Commission and the Plan of Implementation of the World Summit on Sustainable Development (Johannesburg Plan of Implementation), while focusing on identifying constraints and obstacles in the process of implementation with regard to the current thematic cluster. This cluster covers the issues of energy for sustainable development, industrial development, air pollution/atmosphere and climate change. The report of the Commission on Sustainable Development on its fourteenth session[1] includes the Chairman's summary, which reflects the constraints and obstacles, and possible approaches and best practices for the implementation of those intergovernmental agreements, as well as the way forward identified by the ministers attending the high-level segment.

2. At its fifteenth session, the Commission on Sustainable Development will take policy decisions on practical measures and options to expedite implementation for the selected thematic cluster of issues, taking into account the discussions of the intergovernmental preparatory meeting, reports of the Secretary-General and other relevant inputs. The present report is a contribution to the Commission's discussions on policy options and possible actions to address the constraints and obstacles in the process of implementation identified in the report of the review session with regard to air pollution/atmosphere. The other issues of this thematic cluster and the cross-cutting issues identified at the eleventh session of the Commission are addressed in the relevant reports (E/CN.17/2007/2, 3, 5 and 6). Since the issues are interlinked, references to them are included in the present report.

3. The present report draws on a number of sources, including national reports and case studies submitted by Member States, the outcomes of regional implementation meetings and the contributions of major groups and secretariats of various United Nations convention bodies. As the four issues of this thematic cluster are closely linked, the relevance of the interlinkages for policy options is considered in the report on cross-cutting issues (E/CN.17/2007/6). While the cross-cutting issues identified at the eleventh session are considered throughout the present report, many are addressed in the report on cross-cutting issues.

4. Policy options and possible actions for reducing air pollution exist, in terms of both indoor air pollution from traditional biomass fuels which adversely affect the health of women and children in particular and ambient air pollution from all industrial, energy and transport sources.

II. Indoor air pollution

5. The problem of indoor air pollution in both the rural and urban areas of many countries is being addressed by policies and actions that promote access to cleaner fuels for heating and cooking and that raise awareness of the hazards associated with indoor air pollution. The largest reduction in indoor air pollution can be

[1] *Official Records of the Economic and Social Council, 2006, Supplement No. 9* (E/2006/29).

achieved by switching from such solid fuels as biomass and coal to liquid petroleum gas, biogas or electricity. In many developing countries, the LP Gas Rural Energy Challenge initiative of the United Nations Development Programme is being implemented to expand access to cleaner liquid petroleum gas in rural and peri-urban areas. Since 1992, Nepal has implemented its biogas support programme, which has led to the installation of more than 150,000 biogas plants. Most recently, almost 10,000 of those plants were installed under a clean development mechanism project under the Kyoto Protocol.

6. Where fuel switching is not possible, policies could encourage the dissemination of improved cookstoves, which can reduce pollution and cooking time, while better ventilation can reduce exposure to air pollutants. In particular in rural areas, where liquid fuels are often unaffordable, action to scale up such low-cost interventions could significantly reduce exposure. Education to bring about behavioural change, such as keeping young children away from cooking areas, can also be effective. Improved household energy practices promote education, empower women, preserve the health and lives of children and their mothers and benefit forests and the climate. An initial step in this area could be to better publicize the guidelines of the World Health Organization on air quality in order to raise awareness among policymakers and educators of indoor air pollution as a health issue for women and children.

7. Another source of indoor air pollution is the practice of smoking, which can adversely affect the health of children, especially those prone to asthma. Awareness-raising campaigns can be effective in educating the population about the adverse health impacts of tobacco smoke and in reducing indoor concentrations of it.

8. The Partnership for Clean Indoor Air, launched at the World Summit on Sustainable Development, addresses the social and cultural barriers to adopting improved cooking and heating practices and the development of local markets for improved technology. Such initiatives to make cleaner fuels and cleaner-burning stoves available and affordable to the rural and urban poor could be expanded with national and international support.

III. Ambient air pollution

9. Most ambient air pollution is a consequence of industrial development, energy production and use, and transportation. Efforts directed at adopting cleaner production processes, cleaner energy technologies and cleaner fuels therefore contribute to improving air quality and protecting the atmosphere. Strategies that have been adopted include a number of actions, such as information campaigns, the setting of standards, monitoring, strengthened enforcement and the use of such economic instruments as road pricing, pollution taxes and emissions trading. International programmes could support the initiatives of Governments in awareness-raising, planning, implementing and strengthening capacity for monitoring, enforcement and compliance. The Clean Air Initiative of the World Bank provides many examples of effective regional programmes that deal with the major issues of outdoor urban air pollution.

10. Introducing cleaner fuels is an option adopted by many countries to abate urban air pollution. For example, working with the Partnership for Clean Fuels and Vehicles, established at the World Summit on Sustainable Development, as well as

the Clean Air Initiative for Africa, all the countries of sub-Saharan Africa have succeeded in eliminating lead from gasoline. This achievement has been matched at the regional level only by North America and Western Europe. The Partnership provides not only a vehicle for eliminating lead from gasoline in the remaining areas where it is still in use and for working to lower the sulphur content of gasoline and diesel fuel but also a model for similar initiatives to address other serious air pollutants, in particular in urban areas. The use of lead-free fuel also permits policy options that regulate the introduction and use of catalytic converters, which capture the emissions responsible for smog.

11. As Brazil discovered with its proalcool programme, which was implemented to reduce dependency on fossil fuel imports in the transportation sector, the use of such biofuels as ethanol and biodiesel is also an option worth considering for reducing air pollution. An option at the international level is to provide technical assistance at regional and national levels and support the efforts of non-governmental organizations to more widely publicize issues and provide information concerning cleaner fuels and air pollutants. Another option is to support South-South technical assistance to developing countries that plan to produce and use biofuels, in particular ethanol.

12. Polluting transport emissions can also be reduced by choice of vehicles and mode of transport, which can be promoted through tax incentives, as well as by establishing performance standards. The establishment of standards for vehicle fuel efficiency and for vehicle emissions have been used to reduce the emission of air pollutants from vehicles. The situation in California, United States of America, offers an example of both options, with the former limiting vehicle road certification only to compliant models and the latter also establishing standards for vehicle maintenance. Major legislative initiatives have also been implemented in California to phase in zero-emission vehicles and partial zero-emission vehicles, including hybrid electric vehicles that are now commercially available and in considerable demand elsewhere. Some cities have also encouraged non-motorized transport options by incorporating pedestrian walkways and bicycle lanes into urban designs.

13. In developing countries, transport is generally a major source of urban air pollution. Policy options in these countries, in addition to introducing cleaner fuels and establishing vehicle fuel efficiency and emission standards, include restrictions on the use of certain types of high-emission vehicles, especially those powered by small two-stroke engines, the promotion of mass transit systems, the construction of express highways and the redistribution of traffic flows. An option that has already benefited some large cities in developing countries is the establishment of bus rapid transit systems, which provide high-quality transportation services at a considerably lower cost than such other mass transit alternatives as underground and surface rail systems. Examples of novel policies that reduce air pollution, as well as reduce greenhouse gas emissions and promote energy efficiency, include the adoption of multi-mode public transport in Curitiba, Brazil, and the implementation of integrated transport planning with variable electronic tolls for vehicle access to central areas of Singapore.

14. Investment in the introduction, upgrading and expansion of affordable and efficient public transport systems greatly contributes to the alleviation of problems with urban transportation and associated air pollution. In urban areas, consideration could be given to policies favouring efficient transit systems and other solutions to

encourage a shift from private cars to public transportation. Parking fees, business district tolls, vehicle financing arrangements, insurance schemes and other means to affect the cost per trip of vehicle use could also be deployed to encourage a modal shift to more efficient transport systems. Expanded international assistance could help in the development of energy-efficiency policies in the transport sector, including for the design of such public transport schemes as bus rapid transit systems. The sharing of such techniques and experiences, as well as the strategies that integrate transport, urban and regional settlement planning, could promote policies that would significantly improve air quality in the metropolitan areas of many developing countries.

15. Urban air quality is affected not only by transportation emissions but also by the location of industries in or near urban areas. Policy options include the use of urban planning to locate industrial zones beyond urban areas and route heavy traffic flows so they are at a given distance from residential areas. Urban air-quality control programmes in large cities in developing countries could benefit from cooperation with their counterparts in developed countries, such as those in the Sister City International movement or the International Council for Local Environmental Initiatives, an international clearinghouse on sustainable development and environmental protection policies, programmes and techniques that are implemented at the local level.

16. The Clean Air Initiative addresses air quality in cities by facilitating the sharing of knowledge and experiences through partnerships in selected regions of the world. Such cooperation could be useful, in particular with regard to planning, training, capacity-building and gaining access to monitoring technology. Policy options for dealing with industrial air polluters include the establishment and enforcement of emission regulations, assistance to industries through information campaigns, tax relief for compliant enterprises and reducing or eliminating custom duties on imported technologies for industrial emission controls.

17. Regional cooperation in addressing urban air quality has been hampered by inadequate information exchange on best practices in urban air quality management and the lack of harmonized regional air pollution policies. Initiatives, such as the air pollution in megacities of Asia project, aim to increase the capacity of Governments and city authorities to address urban air pollution issues by developing regional action plans and establishing an urban air pollution network for metropolitan areas in Asia.

18. Among the industrial air pollutants, sulphur dioxide is of particular concern as the major source of acid precipitation. Many developed countries have had notable success in controlling such air pollutants as sulphur dioxide through the use of economic instruments, whether through taxes or tradeable emission permits. In particular, the sulphur dioxide emission trading scheme of the United States of America is generally acknowledged to have been both environmentally effective and cost-effective. This has encouraged the adoption of trading schemes in other contexts, such as the experimentation with sulphur dioxide trading in China by the State Environmental Protection Administration and the European emissions trading scheme for greenhouse gas emissions.

IV. Transboundary air pollution and atmosphere

19. Cooperating within the framework of the Convention on Long-Range Transboundary Air Pollution, countries in North America and Europe have been able to significantly reduce transboundary air pollution. The experience gained in the development of the Convention could be shared with countries in other regions, such as Asia, which are increasingly affected by transboundary air pollutants. In particular, it is important to establish monitoring and enforcement mechanisms to ensure that sources of transboundary air pollution are controlled.

20. While aviation and marine shipping are now recognized as increasingly significant sources of air pollution and greenhouse gas emissions, addressing these sources requires international cooperation. The International Civil Aviation Organization has established engine certification standards, including for the nitrogen oxides that result in air pollution at the ground level. An additional concern is the emission of aircraft exhaust at high altitudes, where it can contribute to modifying the composition of the upper atmosphere and the climate through both greenhouse gas emissions and emissions that affect cloud formation. The Intergovernmental Panel on Climate Change has estimated that operational measures, such as improved air traffic management, could realize reductions in fuel burn of between 8 and 18 per cent.

21. Under an annex to the International Convention for the Prevention of Pollution from Ships, which sets limits on sulphur oxide and nitrogen oxide emissions from ship exhausts, parties may establish sulphur emissions control areas, which require use of low sulphur levels or the installation of abatement technology. Sulphur emissions control areas for the Baltic Sea, the North Sea and the Channel Islands entered into force in 2006. At the same time, the shipping industry is promoting the use of emissions trading to control marine air pollution. Within such frameworks, further action could be taken to effectively and economically reduce emissions from aviation and shipping.

22. The ongoing emission of greenhouse gases is changing the composition of the atmosphere to the point where climate is being affected at the global level. This significant air pollution/atmosphere issue is considered in detail in the separate report on policy options and possible actions with regard to climate change (E/CN.17/2007/5).

23. Restoration of the stratospheric ozone layer depends on the continued reduction of stocks of chlorofluorocarbons and halons. The international instruments for dealing with this issue are the Vienna Convention for the Protection of the Ozone Layer, the Montreal Protocol on Substances that Deplete the Ozone Layer and the amendments to the Protocol. While most countries have ratified the Convention and the Protocol, effort is still needed to complete ratification of all the amendments which extend to the ozone-depleting substances covered by the Protocol. Strengthened international efforts could reduce illegal trade in those substances by those attempting to circumvent the provisions of the Protocol. In addition, increased support for research to develop effective alternatives to methyl bromide could advance the reduction and eventual elimination of the stocks of this stratospheric ozone-depleting substance. Kenya has demonstrated the value of such alternatives in agriculture and horticulture.

24. Countries are sharing information on the state of the atmosphere under the Integrated Global Observing Strategy and the Global Atmosphere Watch Programme of the World Meteorological Organization. Enabling the full and active participation of developing countries in such programmes and similar networks could contribute to their capacities for weather forecasting and air pollution monitoring. Sharing cutting-edge observation and modelling tools could enhance existing initiatives.

V. Policy options and possible actions at the international level

25. **Policy options and possible actions at the international level that could be considered with regard to air pollution/atmosphere concerns include supporting:**

(a) **The Partnership for Clean Fuels and Vehicles in its efforts to complete the global elimination of leaded gasoline and supporting that or other initiatives aimed at reducing the sulphur content of vehicle fuels, as well as the emission of serious air pollutants from other sources;**

(b) **Capacity-building for the development of innovative economic and policy instruments for dealing with air pollution at the local level;**

(c) **Establishment of regional and subregional cooperative agreements to reduce transboundary air pollution involving not only monitoring and abatement but also research and policy formulation;**

(d) **Studies to identify ways to effectively and economically reduce both aviation and shipping emissions and to promote initiatives to establish international agreements on emission limits for exhaust from aircraft and ship engines.**